

# AVVISO DI SEMINARIO

Valsamis Ntouskos

## Solution of Inverse and ill posed Problems in robotic task prediction

Venerdì 20 gennaio 2017 – 9:00, Aula B101

### Descrizione

Valsamis Ntouskos, vincitore di procedura valutativa di chiamata per un posto RTDA per il SSD ING-INF/05, terrà presso questo dipartimento un seminario su attività di ricerca svolte e in corso di svolgimento. Il seminario avrà luogo venerdì 20 gennaio 2017 alle 9:00 in Aula B101, DIAG, Via Ariosto 25.

**Abstract:** Modeling and reconstruction of shape and motion are problems of fundamental importance in robotics and computer vision. Inverse Problem theory constitutes a powerful mathematical framework for dealing with ill-posed problems as the ones typically arising in shape and motion modeling. In this talk, a series of methods inspired by Inverse Problem theory for dealing with shape and motion modeling problems related to robotic task prediction will be presented.

In particular, a novel model for the fusion of scalar fields will be presented based on a spatially adaptive total variation regularization method which allows to automatically estimate confidence values of the input data. Moreover, in the context of shape modeling, a method for component-wise modeling of articulated objects and a method for modeling specular surfaces by using the reflective properties of their material will be presented. Regarding motion modeling, a method for reconstructing the 3D pose of human subjects from images based on Nonparametric Bayesian models as well as a novel model for discovering and categorizing primitives of human motion based on Riemannian Geometry will be discussed. The use of these methods and future research directions for robotic task prediction will finally be presented.

**Short Bio:** Valsamis Ntouskos received his Diploma degree in 2006 from the School of Rural and Surveying Engineering in NTUA. He received his BSc degree in Electronics Engineering in 2010 and his MSE degree in Artificial Intelligence and Robotics in 2012 from Sapienza University of Rome, working on his MSE thesis in ALCOR Lab. In June 2016 he received his Ph.D. in Computer Science from the University of Rome "La Sapienza", working on Inverse Problem Theory and Computer Vision. As of June 2016 he is a post-doctoral researcher at Alcor lab, Department of Computer, Control and Management Engineering 'A. Ruberti'. He has been and is currently involved in several EU projects (FP7 NIFTi, FP7 TRADR, H2020 SecondHands).

His main research interests are in the context of inverse problem theory and computer vision. In particular, he is working on regularization methods based on non-smooth convex and non-convex functionals as well as Bayesian methods in infinite dimensional spaces. Other research interests include 3D modeling of articulated, deformable and non-Lambertian objects from images, and motion modeling of humans and animals from images and videos.